

# CRAFT CONTROL SUMMARY

**APPLE** Insert the *Lunar Explorer* disk in your disk drive and turn on your computer and monitor. The title page and the cockpit menu appear. Press **[K]** for keyboard controls, or **[J]** for joystick controls.

**IBM** Insert your DOS disk in Drive A and turn on your computer and monitor. Enter the date and time when the prompts appear. When you see **A>**, insert the *Lunar Explorer* disk in Drive A, type **EXPLORER** and press **[ENTER]**.

It is not necessary to select keyboard or joystick. Control mode is automatically recognized by the program. If the cockpit screen is off-center, use **[SPACEBAR]** to move the picture right and **[BACKSPACE]** to move the picture left until the cockpit is centered on your screen.

At the cockpit menu, select the starting position for your flight:

- [D]** demonstration
- [G]** ground (Exercises 1, 2, 3, 7, 8)
- [A]** approach (Exercises 4, 5)
- [O]** lunar orbit (Exercise 6)
- [C]** cargo run game

## KEYBOARD CONTROLS

Vehicle Rotation Controls			
//././+ //e, //c IBM			
<b>[I]</b>	<b>[↑]</b>	– PTCH	pitch forward; window down
<b>[M]</b>	<b>[↓]</b>	+ PTCH	pitch back; window up
<b>[J]</b>	<b>[←]</b>	– ROLL	bank left
<b>[K]</b>	<b>[→]</b>	+ ROLL	bank right

Engine Thrust Controls		
Apple	IBM	
<b>[0]</b>	*	sets increment of change in thrust at 10%
<b>[2]</b>	*	sets increment of change in thrust at 2%
<b>[+]</b> †	<b>[+]</b> †	increases thrust
<b>[-]</b>	<b>[-]</b>	decreases thrust
* IBM engine thrust increment is always 1%		
† It is not necessary to press <b>[SHIFT]</b>		

Additional Controls	
Apple/IBM	
<b>[R]</b>	refuel. Engine must be shut down; craft must be within 500 m of center of landing pad. Also unloads ore canisters in cargo run mission
<b>[E]</b>	arm engine (if fuel is onboard) at 10% thrust. If engine is already armed, pressing <b>[E]</b> shuts down engine
<b>[ESC]</b>	return to cockpit menu. May be used at any time
<b>[SPACEBAR]</b>	pause flight. To resume flight press any LLV control key
<b>[D]</b>	radar display. Toggles on and off
<b>[L]</b>	loads ore canisters

JOYSTICK CONTROLS

Joystick <b>FORWARD</b>	- PTCH	pitch forward; window down
Joystick <b>BACK</b>	+ PTCH	pitch back; window up
Joystick <b>LEFT</b>	- ROLL	bank left
Joystick <b>RIGHT</b>	+ ROLL	bank right

INSTRUMENT PANEL

<b>ALT</b>	altitude in meters (m) or kilometers (km)
<b>DIST</b>	horizontal distance from base landing pad in meters (m) or kilometers (km)
<b>XRNG</b>	lateral distance in meters (m) or kilometers (km); + right, - left
<b>VELZ</b>	vertical speed in meters per second (m/s); + up, - down. VELZ affects ALT
<b>VELY</b>	horizontal speed in meters per second (m/s); + forward, - back. VELY affects DIST
<b>VELX</b>	lateral speed in meters per second (m/s); + right, - left. VELX affects XRNG
<b>PTCH</b>	angle of ship around the lateral axis in degrees (deg); + window up, - window down. PTCH affects VELZ and VELY
<b>ROLL</b>	angle of the ship around the horizontal axis in degrees (deg); + right, x left. ROLL affects VELZ and VELX
<b>ENG</b>	engine thrust in % (from 0% to 100%)
<b>FUEL</b>	remaining fuel in % (from 0% to 100%)
<b>TIME</b>	elapsed engine burn time in minutes (min). Clock starts when engine is armed

Lights and Messages  
(Colors vary depending on hardware configurations)

Apple	IBM	
BLUE flashing	GREEN flashing	nearing lunar surface
BLUE steady	GREEN steady	landed
ORANGE flashing	RED flashing	fuel below 12%
VIOLET flashing	MAGENTA steady	limit of roll capability
VIOLET steady	BLUE steady	roll disabled due to high PTCH angle
ORANGE flashing	MAGENTA steady	limit of pitch capability
<b>ENGINE ARM</b>	engine is shut down. Engine can be armed by pressing [E]	
<b>HEIGHT LIMIT</b>	craft is approaching maximum altitude (ALT 300 km for Apple/6500 km for IBM); you will be returned automatically to the cockpit menu	
<b>HIGH RATE</b>	you are within 20 seconds of crashing, or velocity is very high and altitude is very low	
<b>LANDED</b>	successful landing	
<b>PAUSE</b>	flight suspended	
<b>DEMO MODE</b>	automatic demonstration is running	
<b>SCORE c/p</b>	score in cargo run mission. c = number of canisters on board; p = your total number of points for entire game	